LETTERS TO THE EDITOR.

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Wiltshireite: a New Mineral.

THE dolomite quarry near Binn (Valais) affords such a large variety of grey sulpharsenites, mainly of lead and copper, that a new one is received with much hesitation; but a crystal recently obtained at Binn gives results which leave little doubt as to its independent character. The specimen consists of a number of very small crystals aggregated together in parallel orientations, and a single well-defined image is obtained from several minute end-facets.

The crystal belongs to the oblique system. The zone of pinakoids consists of smooth faces, 201, 302, 101, 001, and 101, which give good images. Two other important zones are placed symmetrically on opposite sides of the symmetry-plane; they show the forms 522, 211, 111, 122, 011, 111, and others. The faces, placed vertically, are striated parallel to their zone-axis, and give very imperfect images, save when they are obtained across the zone; the forms are 100, 310, 320, 010, and some others. The elements adopted are :—100 : 001 = 79° 16′; 100 : 101 = 48° 47⅓′; and 011 : 001 = 46° 25¾′.

I propose for it the name wiltshireite, after the late Prof. Wiltshire, who was a most generous benefactor to the Cambridge museums of mineralogy and of geology.

Cambridge, August 13. W. J. LEWIS.

The Nomenclature of Radioactivity.

A FEW years ago I wrote to NATURE (vol. lxxvi., p. 638) protesting against the proposal of Prof. Boltwood to call the member of the uranium-radium series, which he had just discovered, by the fanciful name of "ionium" instead of by a name based upon the system of nomenclature started by Sir William Crookes and extended by Prof. Rutherford. Prof. Rutherford replied (p. 661) that the time had not yet come for the establishment of a definite system of nomenclature, but that he hoped that some day "physicists and chemists would meet together to revise the whole system." After such a decision from the first authority on the subject I could do nothing but collapse; but there are three reasons why the present moment seems to me suitable for a renewal of vitality.

First, Prof. Rutherford said that he thought it undesirable (I did not agree with him) to fix a method of naming until nearly all the products to be named appeared to have been discovered. I believe it is about two years since the last new member was added to any of the series previously known. Second, there is at hand an admirable opportunity for the meeting together of physicists and chemists which he suggests—the congress at Brussels next month. Third, it appears to me that reform has been made urgent by a particularly disastrous attempt at unsystematic nomenclature. In a recent number of the *Comptes rendus* Sir William Ramsay, after determining more certainly the molecular weight of radium emanation by a beautiful experiment, and finding the result to confirm his suspicion that this substance belongs to the group of inactive gases, proposes that it should henceforward be called "niton." (By a curious oversight, he suggests that the symbol should be "Ni," which is, of course, already appropriated.)

The purpose of a systematic nomenclature is to express relations between the objects named. So long as elements were regarded as wholly independent objects, the practice of naming them, as if they were dogs, on purely sentimental grounds was more or less justifiable, for there were no relations between them to express. As soon as the first general relation between the elements, the periodic "law," was discovered, a systematic nomenclature was desirable, and some feeble steps towards it were taken. With the discovery of the radio-active elements, the whole importance of which lies in their relations to each other, a complete system becomes a necessity.

Let me take an analogy. If Sir William Ramsay takes a house in the country, where buildings are scattered at random, nobody will care what he calls it. But if he takes a house in the street of a city and proposes to replace the number on the door by "Bellevue," or "Glencoe," or "Chatsworth," or any other of the names dear to lodging-house proprietors, he will meet with scant sympathy from the postal and municipal authorities. His case will not be much better if, like Prof. Boltwood, he builds a house where there was none before, instead of merely improving one that existed already.

The only defence Sir William Ramsay can offer for his proposal is that it is in accordance with chemical, if not with radio-active, nomenclature. If this were true, the question would arise whether the chemical or the radio-active properties of the element were more important; I cannot conceive that anyone would doubt the superior interest of the latter. But it is not true. The name which he proposes, interpreted according to chemical usage, suggests (1) that the substance is non-metallic, and (2) that it is not an inactive gas. It suggests (1) because it ends in -on; it suggests (2) because the root is Latin. The only names of elements ending in -on which are not those of inactive gases—carbon, boron, silicon—all have Latin roots; all the names of inactive gases have Greek roots. By the choice of a Latin name, radium emanation is placed in the former and not in the latter group. Surely, also, when in the names of the argon group we have a rare instance of terms, invented recently, which are linguistically correct, it is a crime to spoil the group by the intrusion of one of those philological barbarities the toleration of which does so little credit to the general intelligence of men of science. I do not know whether Sir William Ramsay has been troubled by the fact that the most familiar Greek word for "bright," ἀργός, is clearly inadmissible, but I am sure that any classical scholar could provide a suitable synonym.

I am not going to propose a system of radio-active nomenclature, for, if I succeeded in attracting any attention, people would then confine themselves to abusing my system, and not to considering whether any system is desirable. But I should like to point out the faults of the present method, and direct attention to two possibilities for a new method.

The faults of the old system are (1) that it does not permit of interpolation; (2) that it separates systems which are now known to be connected, such as uranium and radium; (3) that it lays far too much stress on the accidental fact that some of the elements are gases at ordinary temperatures; and (4) that it is anomalous in making X precede A.

The first possibility for a new system is to order the elements by numbers, and not by letters. Such a system admits of indefinite interpolation; between 1 and 2 there can be interpolated, first, the 9 terms 1·1–1·9, then the 90 terms 1·01–1·99, and so on. The second possibility lies in the fact that the rays emitted by the elements are distinguished by single letters, so that the radiation from an element might be expressed by the terminations -o (for no rays), -a (for α rays), -ob (for β and γ rays only), -ab for all kinds of rays. Of course, the form "radiob" would have to be avoided on account of prior rights (NATURE, vol. lxxii., p. 79), and modification would be needed if the additional termination -g were rendered necessary by a discovery that β and γ rays could occur separately.

A scientific system of names need not displace completely such well-known terms as "radium" any more than the appropriate name, according to the excellent system of organic chemistry, has displaced that of (say) "indigo." But I maintain strongly that every radio-active element ought to have a name discoverable from its properties, and a name from which, conversely, its properties may be discovered. Such a plan would not help greatly those who are so accustomed to radio-active work that the association of a fanciful name with definite properties is intuitive, but it would be an inestimable boon to those who now, when they hear of "mesothorium,"

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have to trust an imperfect memory or else search laboriously through original memoirs.

Leeds, August 2. NORMAN R. CAMPBELL.

Perseid Meteoric Shower, 1910.

THE only night really good for witnessing the Perseid shower near its maximum this year was August 10, when the clear state of the sky afforded every facility for securing observations.

I began watching at 9h. p.m., and up to 11h. 45m. p.m. there were fifty-two meteors, so that the horary rate was nearly twenty, of which about three-fourths were Perseids. The finest specimen appeared at 10h. 6m.; it had a long and slowish flight from 328°+37° to 301°+8°, and left a bright streak just above the small stars of Delphinus for fifteen seconds. The meteor itself was much more luminous than Venus, and was also observed by Mr. T. K. Jenkins at Nantyglo. From a comparison of the recorded paths, I find the height 75 to 48 miles over Wiltshire, and the end point near Blandford, Dorset.

The velocity was decidedly slower than that of the ordinary Perseid, its observed speed being 27 miles per second.

I saw brilliant Perseids also at 11.34 and 11.46, the former shortening towards α Andromedæ and the latter just under Polaris, and at 11.34½ there was a beautiful slow-moving Draconid falling from 303½°+33° to 311°+19½°. Its pear-shaped nucleus threw off a tail of yellow sparks as it sailed down the sky.

I think the display of August 10 was better than it was last year, and gave promise of a pretty abundant shower on August 11 and 12, but I cannot speak as to its actual character, the firmament being cloudy on those dates at Bristol.

There were a few breaks in the clouds on August 12, and I happened to notice a fine meteor at 11h. 49m. shooting upwards from 355°+40° to 338½°+50°. It was as bright as Jupiter at least, and left a train, but it quickly disappeared. The meteor was not a Perseid, but apparently belonged to a shower with radiant lying eastwards of α Andromedæ, or at 9°+27°. The meteor was also seen by Mr. G. Powell at Aberdare, and I find its height 89 to 53 miles. It was nearly over Bath at end point. Velocity 40 miles per second, and certainly more rapid than the Perseid alluded to above, though it should have been the swifter of the pair.

Several observers have written me describing the Perseid shower as fairly rich on August 10, though the maximum was not due until the morning of, or night following, August 12. Some large meteors were also recorded on August 5, which was a very clear night, and the Perseid display was in pretty strong evidence even at that early date.

W. F. DENNING.

Brilliant Meteor of July 31.

AN exceedingly beautiful meteor, one of the finest I have seen, was observed from this vessel, while at sea, on the night of July 31. The time of observation was 10h. 0m. ship's apparent time, or 13h. 0m. G.M.T., the position of the ship at the time of observation being latitude 43·34° N., longitude 43·37 W. The duration of the flight was between fifteen and twenty seconds, and the meteor was much more brilliant than Venus. It pursued an almost horizontal course, about 8° above the horizon, passing below the constellations Ursa Major, Perseus, and Aries, in all traversing an arc of about 135°.

At first the meteor appeared as a brilliant steel-blue ball, with a short tail of the same colour. It disappeared at a point about 90° from its first position, reappearing almost immediately, and exploding and dividing into three or four parts, with a luminous tail some 3° in length, and of a vivid red and blue colour. Its motion was slow, and it conveyed to all who witnessed it, officers and passengers alike, the impression of being at no great distance from the ship when it exploded.

The night was very fine; and the chief officer, who was on the bridge at the time, reports that when it disappeared it left a small black cloud in the sky. At the time of seeing this meteor we were in wireless communication with the U.S.N. *Texas*, and it is hoped that other observations may be forthcoming from other vessels at sea. A. L. CORTIE.

On Board S.S. *Cymric*, August 3.

ON COLOUR VISION AT THE ENDS OF THE SPECTRUM.

IT is half a century since Maxwell [1] investigated the chromatic relations of the spectral colours and exhibited the results on Newton's diagram. The curve "forms two sides of a triangle with doubtful fragments of the third side. Now, if three colours in Newton's diagram lie in a straight line, the middle one is a compound of the two others. Hence all the colours of the spectrum may be compounded of those which lie at the angles of this triangle. These correspond to the following—scarlet, wave-length (in Fraunhofer's measure), 2328; green, wave-length, 1914; blue, wave-length, 1717. All the other colours of the spectrum may be produced by combinations of these; and since all natural colours are compounded of the colours of the spectrum, they may be compounded of these three primary colours. I [Maxwell] have strong reason to believe that these are the three primary colours corresponding to three modes of sensation in the organ of vision, on which the whole system of colour, as seen by the normal eye, depends."

Later observations, such as those of König and Dieterici,[2] have in the main confirmed Maxwell's conclusions. The green corner is indeed more rounded off than he supposed. It is with regard to the "doubtful fragments of the third side" that I have something to say. According to Maxwell's results with both of his observers the extreme red deviates from the less extreme by a tendency towards blue. Neither my friends [3] nor I can perceive anything of this. When the extreme and the less extreme red are seen in juxtaposition in the colour-box, no difference whatever can be perceived after the brightnesses are adjusted to equality. I have not any precise measurements of wave-length, but the extreme red passed a cobalt glass while the less extreme was stopped. Observations at the ends of the spectrum are more difficult than elsewhere. Owing to deficiency of illumination at these parts there is more danger of false light finding access. To get satisfactory results I found it desirable to supplement the action of the prisms by placing red glass over the slits. It is probable that Maxwell was misled by some defect of this sort, since the differences he found would appear to lie outside the errors of observation. The German observers, it should be added, also found the colour constant at the red end.

At the other extreme the tendency of the violet towards red is, to my vision, not in the least doubtful. Some remarks made a few years ago by Dr. Burch, who speaks of violet in terms which I could not possibly use, were the occasion of a more particular examination. Although, so far as I remembered, I had never made the trial, I was confident that I should be able to match violet approximately with blue *plus* red, and full blue with violet *plus* green. And it seemed further that this must be the general estimation, as there is no widely spread protest against describing the upper extreme of the spectrum as "violet"—a name which would be quite inappropriate in the absence of an approach towards red.

[1] Phil. Trans., 1860.
[2] Helmholtz, "Phys. Optik," 2nd edition, p 340.
[3] Mr. Gerald Balfour included.

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